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# PATENT SPECIFICATION



Application Date: April 25, 1933. No. 12,099/33.

Complete Left: March 23, 1934.

Complete Accepted: Oct. 25, 1934.

**418,675**

## PROVISIONAL SPECIFICATION.

### A New or Improved Spring Latch.

We, SMITH & DAVIS, LIMITED, a Company organised under the Laws of Great Britain, of Beacon Works, Hampton Street, Birmingham, 19, in the County of Warwick, and HOWARD FREDERICK SMITH, a Subject of the King of Great Britain, of the Company's address, do hereby declare the nature of this invention to be as follows:—

10 This invention relates to spring latch fastenings for a pair of relatively-movable members, of the kind comprising a body or casing mounted on one member and carrying a spring-loaded slidable bolt, 15 the latter having one end suitably shaped to engage a socket arranged in or on the other member.

The invention is particularly applicable to fastening means for hinged members, 20 such as the doors of cupboards, cabinets, windows, or other hinged flaps, and it has for its chief object to provide a neat and simple construction of spring catch, which will be inexpensive to produce and to 25 assemble.

According to this invention, the spring latch consists of three parts, a casing of box like form, a sliding bolt having a shoulder adjacent its nose, and a spring 30 located between the bolt and the front of the casing and having a pair of arms, one engaging the casing and the other engaging the shoulder on the bolt.

The bolt is preferably provided with suitable stops for limiting its longitudinal travel, and according to a further feature of the invention, these stops are formed 35 integrally with the bolt.

By a still further feature of the invention, one of the stops may constitute a 40 handle whereby the bolt can be retracted.

In a very simple construction of spring catch according to this invention, the bolt is formed by sawing off a short length 45 from a strip of extruded brass or other metal. The cross-section of the strip is rectangular, except for one edge which is bevelled or rounded off on both sides, and a longitudinal groove or channel adjacent 50 the bevelled edge of the strip. Both the bevelling and grooving are effected during the extruding process, and it will be seen that a short length sawn from such a strip

provides a bolt ready and formed with one end rounded or bevelled and a transverse 55 groove adjacent that end.

This bolt is mounted in a casing which may be cast or, preferably, formed from pressed metal in a manner to be described later, and is arranged to slide transversely 60 thereof under the action of a spring located within the casing.

This spring may be of "U" or "S" form, of round, or flat section wire and one leg engages the groove in the bolt 65 (or, rather, the transverse shoulder formed by one side of the groove) whilst another or the other engages the opposite side of the casing, so as to bias the bolt into the "shot" position with its rounded end 70 protruding from the side of the casing. To limit the longitudinal motion of the bolt suitable stops are provided and these may take the form of pegs screwed or 75 otherwise inserted into the bolt so as to engage the sides of the casing at the limits of the bolt's permissible travel. Alternatively the stops may be formed integrally with the bolt, as will be 80 described later.

The simple construction above described is suitable for attachment to the edge of a hinged member (particularly where such member is arranged to swing from side to 85 side of the plane of the fixed frame to which it is hinged), the bolt being forced back when its rounded end makes contact with the edge of the frame, or of a socket mounted in or on the frame, and then shooting home into the socket so as 90 to hold the hinged member in position. For disengaging the catch, the hinged member would be provided with a suitable handle or handles.

In a preferred construction of catch 95 which is specially suitable for inexpensive production and assembly, the casing is a metal pressing. The edges of a suitably-shaped blank of sheet steel are turned up to form a rectangular open box and 100 the ends of this box are again bent outwardly to provide ears or lugs, which are drilled to take screws whereby the casing is attached with its open face against the hinged member. 105

The bolt is slidable transversely of the

casing, through longitudinal slots punched in the sides thereof during the pressing operation. As in the first construction, the bolt is constituted by a short length of extruded brass strip, but in this case the transverse groove is undercut to allow a more secure engagement by the spring. The opposite side of the bolt is formed with two transverse grooves or recesses, leaving between them an upstanding rib which is adapted to engage the inside of the casing to prevent the bolt being retracted too far. Two of these ribs may be provided, if desired, but preferably the extruded strip is made of roughly angle-section, so that the bolt cut therefrom has an upturned portion which forms a handle for retracting the bolt and also serves as a stop by engaging the edge of the casing. The bolt has its operation end bevelled on one or both sides, the beveling being effected during the extrusion of the strip before the bolt is cut from it.

The spring may be formed of wire in the same manner as the well-known type of safety pin, with a coil at the bend or may be of "U" or "S" form. The bolt is inserted with the side having the undercut groove adjacent the front or closed side of the casing, and the spring is disposed within the casing between the bolt and the front or closed side of the casing as already described and tends to force the bolt against the edges of the slots in the latter so as to prevent rattle. Further support for the bolt when retracted is provided at the slot adjacent its operative end, this slot being formed not by completely cutting out a piece of metal, but by bending back a tongue in a direction parallel to the bolt.

The dimensions of the bolt and the slots formed in the casing are such as just to

enable the bolt to be inserted in the casing during assembly, and to allow as little lateral play as possible once it is in position. One of the slots may have its edge portion bent outwardly to permit of easy insertion of the bolt, the said edge portion subsequently being bent back to its original position thus reducing the width of the slot after the bolt is in position and preventing it from becoming detached. The disposition of the transverse grooves or recesses in the bolt is such as to enable the rib forming the inward stop to pass through one of the slots, but once the bolt is in place the spring, which is then inserted, forces it against one side of the slot and thus prevents its subsequent complete withdrawal from the casing. The spring may be inserted after the casing has been fully pressed to shape, or one end of the latter may not be bent up until the spring is in place.

In another arrangement the front or closed side of the casing may be slotted and a pin carried by the bolt may project through this slot so that the bolt can be operated thereby. In such an arrangement the bolt may be of strip form and will extend through one side only of the casing, the opposite side being provided with an integral lug having ears which are bent inwardly to form a guide for the inner end of the bolt.

Dated the 24th day of April, 1933.

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## COMPLETE SPECIFICATION.

### A New or Improved Spring Latch.

We, SMITH & DAVIS, LIMITED, a Company organised under the Laws of Great Britain, of Beacon Works, Hampton Street, Birmingham, 19, in the County of Warwick, and HOWARD FREDERICK SMITH, a Subject of the King of Great Britain, of the Company's address, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to spring latch fastenings for relatively movable mem-

bers, and is especially applicable to fastening means for hinged members such as cupboard or cabinet doors, fan-lights, and other flaps.

It concerns in particular that type of fastening device which comprises a casing mounted on one member and carrying a spring-loaded bolt adapted to co-operate with a striking plate or its equivalent on the other member, the spring aforesaid having a pair of legs one of which engages the casing and the other a shoulder formed on the bolt.

In spring latches of the above type as

hitherto proposed, the spring has been arranged to act against a plain perpendicular shoulder on the bolt, and furthermore such shoulder has been engaged by the extremity only of the spring.

Such an arrangement, particularly when springs formed from round section wire are employed, renders it possible for the end of the spring, due to slight displacement of the latter in the casing during operation of the bolt, to become entirely disengaged from the shoulder aforesaid or even to slip between the wall of the casing and the bolt and so render the latter immovable.

The present invention has for its chief object to provide an improved construction of latch in which such accidental disengagement of the spring from the bolt is prevented.

According to this invention, the spring is located between the bolt and the front of the casing, the shoulder on the bolt which is engaged by such spring being considerably undercut. Preferably the shoulder is engaged by the central part of the leg of the spring, which latter may be of hairpin shape or of single or double "S" form.

In order that our invention may be clearly understood and more readily carried into practice, we have appended hereunto one sheet of drawings illustrating the same, wherein:—

Figure 1 is a perspective front view of one form of spring latch in accordance with the present invention.

Figure 2 is a rear elevation.

Figure 3 is a transverse sectional view, of the spring latch shown in Figure 1.

Figure 4 is a perspective rear view showing the bolt and casing thereof before assembly.

Figure 5 is a view similar to Figure 1, but depicting a modified construction, and

Figures 6 and 7 are views corresponding to Figures 2 and 3, and showing the modified form of spring latch above-mentioned.

In the construction of spring latch illustrated in Figures 1 to 4, which is specially suitable for inexpensive production and assembly, the casing 10 is formed as a metal pressing. The marginal portions of a suitably-shaped blank of sheet steel are turned up to form the sides 11 and ends 12 of a rectangular open box, as is shown most clearly in Figure 4, and the ends 12 are again bent outwardly to provide ears or lugs 13, which are drilled at 14 to take screws whereby the casing may be attached with its open face against the hinged member.

The bolt 15 is slidable, transversely of the casing, through longitudinal slots 16,

17 which are formed in the sides thereof while the casing is being pressed to shape, and is produced in a single operation by sawing off a short length from a strip of extruded brass or other metal of the requisite cross-section. In a convenient arrangement, the strip from which the bolt is cut is formed with one edge bevelled or rounded and a longitudinal groove or channel adjacent this bevelled edge.

Both the bevelling and grooving are effected during the extruding process, and it will be seen that a short length sawn from such a strip provides a bolt already formed with its operative end or nose rounded or bevelled (as at 26) on one or both sides and a transverse groove (shown at 18) adjacent such operative end. The shoulder formed by one side of this transverse groove is considerably undercut at 19 to allow a more secure engagement by the spring 20. The opposite side of the bolt is formed with two transverse grooves or recesses 21, 22, leaving between them an upstanding rib 23 which is adapted to engage the inner surface of the side 11 of the casing to prevent the bolt being retracted too far. Two of these ribs may be provided, if desired, but preferably the extruded strip is made of roughly angle-section or "L" shape, so that the bolt cut therefrom has, as shown in Figure 3, an upturned portion 24 which forms a handle for retracting the bolt and also serves as a stop by engaging the side 11 of the casing.

The spring 20 may be formed of round or flat section wire in the same manner as the well-known type of safety pin, with a coil at the bend, but preferably it is of "U" or "S" form as shown. The bolt 15 is inserted with the side having the undercut shoulder 19 adjacent the front wall of the casing 10, and the spring 20 is disposed within the latter between the bolt and the front wall aforesaid.

Effective support for the bolt when retracted is provided at the slot 16 adjacent its operative end, this slot being formed not by completely cutting out a piece of metal, but by bending a tongue 27 inwardly of the casing and in a direction parallel to the bolt. If the casing is provided with a back such a tongue may be unnecessary.

The dimensions of the bolt 15 and the slots 16, 17 formed in the casing are such as just to enable the bolt to be inserted in the latter during assembly, and to allow it as little side-play as possible once it is in position. The slot 17 may be produced by slitting the marginal portion of the original blank before it is bent up to form the side 11 of the casing, thus leaving a tongue 28 projecting laterally in

the plane of the front wall of the casing, as shown in Figure 4. After insertion of the bolt, this tongue 28 is bent at right angles so as to lie flush with the side 11 (see Figure 3), thus reducing the width of the slot 17 and preventing detachment of the bolt from the casing. The disposition of the transverse grooves or recesses 21, 22 in the bolt is such as to enable the rib 23 to pass through the slot 17 during assembly, but when the tongue 28 is bent over as above described, the bolt is forced against one side of the slot, the rib 23 then abutting the side 11 of the casing at the inward limit of the bolt's travel and serving as a stop. The spring may be inserted after the casing has been fully pressed to shape, or one of the ends 12 of the latter may not be bent up until the spring is in place.

In the construction illustrated in Figures 1 to 4, the spring is made in "S" shape from round section wire, and is arranged with the central part of one leg 29 in engagement with the undercut side 19 of the transverse groove 18 in the bolt, whilst the other leg 30 engages the opposite side 11 of the casing, so as to bias the bolt into its "shot" position. The bolt remains fully shot except during engagement with, or disengagement from, the striking plate or its equivalent.

It will be understood that a handle on the bolt may be dispensed with in certain cases, as, for instance, when the catch is intended for attachment to the edge of a hinged member capable of swinging from side to side of the plane of the fixed frame to which it is hinged. In such a case, a very simple construction of catch can be employed, the casing being formed as a casting or pressed from sheet metal in the manner above described, whilst the bolt is produced by cutting off a length from an extruded strip of substantially rectangular cross-section. The section of the strip is preferably such that the operative end of the bolt so formed is bevelled or rounded off on both sides. The stops for limiting the bolt's travel may, in this simple construction of catch, take the form of pegs screwed or otherwise inserted into the bolt, or alternatively they may be formed integrally therewith, in the same manner as the stop 23.

In the modified form of spring latch shown in Figures 5 to 7, the front wall of the casing 31 is slotted at 32 and a handle 33 or pin carried by the bolt 34 may project through this slot so that the bolt can be operated thereby. The bolt is produced in a single operation by cutting a length from a strip of extruded metal as in the previous construction, and is formed with a transverse rib 35 which

engages the front wall of the casing. The handle 33 is conveniently of the shape shown and is riveted to the bolt when the latter is in place, its width being greater than that of the slot 32 to prevent the bolt tilting away from the front of the casing. The spring 36 may have one leg formed with a double bend so as to engage with both the undercut shoulder 37 on the bolt and the handle 33, while its other leg may be retained in engagement with the side of the casing by pressed-out tongues 38 thereon.

The engagement of the leg of the double "S" spring with the undercut shoulder 37 causes such leg to be forced out of the general plane in which the spring lies, with the result that the bolt is resiliently pressed against the front wall of the casing.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:—

1. A spring latch of the kind referred to, wherein the spring is located between the bolt and the front of the casing, the shoulder on the bolt which is engaged by such spring being considerably undercut.

2. A spring latch according to Claim 1, wherein the shoulder is engaged by the central part of the leg of the spring.

3. A spring latch according to either of the preceding Claims, wherein the bolt-engaging leg of the spring is forced out of the general plane in which the spring lies, the bolt being thereby resiliently pressed against the front of the casing.

4. A spring latch according to any of the preceding Claims, wherein the bolt is formed with spaced integral projections extending laterally thereof and adapted to abut parts of the casing so as to limit the longitudinal travel of the bolt in either direction, one of such projections constituting a handle whereby the bolt may be retracted.

5. A spring latch according to any of the preceding Claims, wherein the casing is bent into shape from a sheet-metal blank, a portion of one wall being pressed laterally so as to provide at the same time an aperture in which the bolt is adapted to slide and a tongue of metal which forms a longitudinal guide therefor.

6. A spring latch according to any of the preceding Claims, wherein the bolt is provided with a handle which extends through a slot in the front of the casing.

7. A spring latch constructed substantially as described with reference to Figures 1 to 4, or to Figures 5 to 7, of the accompanying drawings.

Dated the 16th day of March, 1934.

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